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EXAMINER

SHECHTMAN, SEAN P

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/032,959

Applicant(s)

LANDERS ET AL.

Examiner

Sean P. Shechtman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,9-18,21-24,31-40,43-46,53-62,65-68,75-84,87 and 88 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,9-18,21-24,31-40,43-46,53-62,65-68,75-84,87 and 88 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____



DETAILED ACTION

1. Claims 1, 2, 9-18, 21-24, 31-40, 43-46, 53-62, 65-68, 75-84, 87 and 88 are presented for examination. Claims 1, 9, 10, 12, 15, 16, 23, 24, 32, 34, 38, 45, 46, 54, 56, 60, 67, 68, 78, 81, and 82 have been amended. Claims 3-8, 19, 20, 25-30, 41, 42, 47-52, 63, 64, 69-74, 85 and 86 have been cancelled.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show “that the master process model 20 depicted includes with it, but is not limited to, the virtual blank 10, added manufacturing features 12a-12j by way of virtual machining, and datum planes 2, 3, and 4 all in their respective associative relationships as exhibited from the geometries and characteristics of the reference set 26” as described in the specification on page 19, lines 9-13. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either

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"Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: Referring to pages 18-19 and figures 8-9, it is unclear what part of the description is referring to figure 8 and what part of the description is referring to figure 9.

Claim Objections

4. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim (See claims 12-14, 34-36, 56-58, 78-80). In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

5. Claims 12, 34, 56 and 78 are objected to under 37 CFR 1.75(c) as being in improper form because a dependent claim must refer back to another claim or claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1, 2, 9-18, 21-24, 31-40, 43-46, 53-62, 65-68, 75-84, 87 and 88 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 1, 23, 45, and 67 require the limitation of virtual machining a manufacturing feature into a virtual blank, wherein the manufacturing feature exhibits an associative relationship with a coordinate system, wherein the virtual blank is included in a master product and process concurrent model that lacks an associative relationship with the coordinate system. Since the virtual blank is machined with a manufacturing feature exhibiting an associative relationship with a coordinate system and the master product and process concurrent model includes the virtual blank, the master product and process concurrent model would also, by association, have a relationship with the coordinate system. Therefore, it is not clear how the master product and process concurrent model lacks an associative relationship with the coordinate system.

7. Referring to claim 23, it is not clear how a method can comprise a product drawing. Claims in which both an apparatus and the method steps of using the apparatus is indefinite under 35 USC 112, second paragraph. This type of claim is indefinite because it fails to positively recite the boundaries sought for protection. The metes and bounds of the claim cannot be determined because it is unclear as to which category of subject matter is sought for protection, i.e., the method or the apparatus.

8. Claim 2 requires the limitation that "said associative relationship is a parent/child relationship", however claim 2 depends on claim 1 and claim 1 recites the limitations of a model

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“lacking an associative relationship” and a feature “exhibiting an associative relationship”.

Therefore it is not clear which associative relationship is “said associative relationship”.

9. Claim 24 requires the limitation that “said associative relationship is a parent/child relationship”, however claim 24 depends on claim 23 and claim 23 recites the limitations of a model “lacking an associative relationship” and a feature “exhibiting an associative relationship”. Therefore it is not clear which associative relationship is “said associative relationship”.

10. Claim 46 requires the limitation that “said associative relationship is a parent/child relationship”, however claim 46 depends on claim 45 and claim 45 recites the limitations of a model “lacking an associative relationship” and a feature “exhibiting an associative relationship”. Therefore it is not clear which associative relationship is “said associative relationship”.

11. Claim 68 requires the limitation that “said associative relationship is a parent/child relationship”, however claim 68 depends on claim 67 and claim 67 recites the limitations of a model “lacking an associative relationship” and a feature “exhibiting an associative relationship”. Therefore it is not clear which associative relationship is “said associative relationship”.

12. Claims 16, 38, 60, and 82 recites the limitation "said datum planes" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

13. Claims 67, 68, 75-84, 87 and 88 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Referring to claims 67, 68, 75-84, 87 and 88, the data signal is not tangibly embodied in a computer-readable medium. Data structures not claimed as tangibly embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

14. Claims 1, 2, 9-18, 21-24, 31-40, 43-46, 53-62, 65-68, 75-84, 87 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,629,065 to Gadh (supplied by applicant) in view of U.S. Pat. No. 4,928,221 to Belkhiter.

Referring to claims 1, 23, 45, and 67, Gadh clearly teaches a method, system, and computer program of horizontally structured CAD/CAM manufacturing for concurrent product and process design (Fig. 55A and 55B; Col. 36, lines 28-39; Col. 8, lines 5-24), comprising:

identifying a real-world blank for machining into an actual part (Figs. 10A-10C and corresponding description, i.e., “rubber-banding”); creating a master product and process concurrent model (Col. 10, lines 22-58) having both process and product model characteristics, said master product and process concurrent model including a virtual blank corresponding to said real-world blank (Fig. 55A, element b1) , said master product and process concurrent model . lacking an associative relationship with a coordinate system (See Fig. 25A-25D; Col. 24, lines 6-

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32); and virtual machining a manufacturing feature into said virtual blank (See Fig. 55A and Col. 36, lines 28-39), said manufacturing feature exhibiting an associative relationship with said coordinate system (See Fig. 25A-25D; Col. 24, lines 6-32);

Referring to claims 2, 24, 46, 68, Gadh teaches the above, wherein said associative relationship is a parent/child relationship (Col. 24, lines 6-32; Col. 40, lines 14-57). Referring to claims 9-10, 31-32, 53-54, 75-76, Gadh teaches the above, further comprising creating extracts from said master product and process model, wherein said extracts comprise replicated models of said master product and process model at various operations of said manufacturing (Fig. 55C; Col. 10, line 54- Col. 11, line 7). Referring to claims 12-17, 34-39, 56-61, 78-83, Gadh teaches the above, wherein said virtual blank is positioned and oriented relative to said coordinate system, wherein said virtual blank is generated as a three dimensional parametric solid model from a reference set geometry, wherein said reference set geometry is defined by dimensional characteristics of a modeled part, wherein establishing said coordinate system comprises one or more datum planes, wherein said coordinate system comprises: creating a first datum plane positioned and oriented relative to a reference, creating a second datum plane positioned and oriented relative to said reference; and creating a third datum plane positioned and oriented relative to said reference, wherein said first datum plane, said second datum plane, and said third datum plane are orthogonal (Figs. 25A-D and 55A).

Gadh teaches all of the limitations set forth above and Gadh clearly teaches creating a model and constructing a part in the VDSF, however, Gadh fails to provide for generating a product drawing of a real-world component from said master product and process concurrent model and deriving manufacturing instructions from the master product and process concurrent

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model to create a real-world component by machining the manufacturing feature into the real-world blank.

While the instant claims call for horizontally structured CAD/CAM manufacturing, as presented by Gadh above, the instant specification appears to describe this horizontal structure with respect to the establishment of relationships that are taught as both horizontal and vertical (See page 4-5 and 9-10 of the instant specification). Therefore, even though the examiner interprets the claims to require at least a horizontally structured relationship in the preamble, the claims do not required any of the limitations in the body of the claims to have such a horizontal structure, exclusive, or non-exclusive CAD/CAM relationship. Namely, the claims do not require a horizontally structured CAD/CAM relationship with respect to generating a product drawing or deriving machining instructions to create a real-world component by machining the manufacturing feature into the real-world blank.

Furthermore, the recitation “horizontally structured CAD/CAM manufacturing” has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Clearly, the body of the claims do not depend on the preamble for completeness, in fact, applicant has admitted that the intended use of the horizontal structure is not limited by non-verticality (See pages 4-5 of the instant specification).

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In view of the above, the examiner respectfully submits that patentability resides in the determination of non-obviousness with respect to generating a product drawing of a real-world component from said master product and process concurrent model and deriving manufacturing instructions from the master product and process concurrent model to create a real-world component by machining the manufacturing feature into the real-world blank. The examiner respectfully submits that generating a product drawing of an actual part and deriving machining instructions to create the actual part by machining, in real life, a manufacturing feature, into a blank, is commonly known in the art, and therefore, the examiner is unable to make said determination of non-obviousness at this time.

The examiner believes these limitations are clearly taught by Belkhiter.

Referring to claims 1, 23, 45, and 67, Belkhiter clearly teaches analogous art, wherein a conventional CAD/CAM system is used to produce a part drawing (Col. 2, lines 53-66 of '221) and then generating machining instructions to create said actual part by machining manufacturing features into a blank (See Cols. 7-8, table 2; Col. 1, lines 6-14 of '221). Referring to claims 11, 18, 21-22, 33, 40, 43-44, 55, 62, 65-66, 77, 84, 87, 88, Belkhiter teaches creating extracts from a master product and process model, wherein said extracts are used to generate manufacturing process sheets, wherein said product drawings include an associative relationship with said master product and process concurrent model (Col. 14, lines 6-11 of '221), wherein the master product and process concurrent model links to a process planning system, wherein said process planning system comprises automated creation of a manufacturing process plan (Fig. 1, element 14; Col. 3, lines 24-48 of '221).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Belkhiter with the teachings of Gadh.

One of ordinary skill in the art would have been motivated to combine Belkhiter with Gadh because Belkhiter teaches a part program suitable for machining a part from a drawing without the need for human intervention. Furthermore, Belkhiter teaches a system that reduces lead-time between the request for a part and the machining of a part. Further still, Belkhiter teaches a system that reduces manpower costs (Col. 1, line 62 - Col. 2, line 2 of '221).

Response to Arguments

Applicant's arguments filed July 5th 2005 have been fully considered but they are not persuasive.

15. Applicant argues that claim 67 has been amended to recite that the signal is tangibly embodied in a medium. The examiner respectfully disagrees. The examiner respectfully submits that amended claim 67 does not recite, "the signal is tangibly embodied in a medium". Data structures not claimed as tangibly embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

16. Applicant argues that Gadh fails to teach that the master product and process concurrent model is lacking an associative relationship with a coordinate system. The examiner respectfully disagrees. The examiner respectfully submits that Gadh reads on this limitation in anyone of the following ways:

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a) Gadh clearly teaches at least two coordinate systems. One from the user viewpoint and the others that are XYZ coordinate systems fixed on the model. Once a user viewpoint command is issued to align a child element the VDSF determines which of the XYZ coordinate axes fixed on the model most closely corresponds to the left-right axis (from the user viewpoint) and the child element is aligned on the model along that axis of the model (the XYZ axis) (See col. 24, lines 6-32). If the model were not lacking an associative relationship with the user viewpoint there would be nothing for VDSF to determine. It is because the model is lacking an associative relationship with the user viewpoint that the VDSF must make the determination of which XYZ axis to use in alignment.

b) Figs. 25A-25D of Gadh show and Col. 24, lines 6-14 teaches b1 has a coordinate system and b2 has a coordinate system, wherein b1 and b1's coordinate system lack an associative relationship with the coordinate system of b2, i.e., it is clear that one of ordinary skill in the art would not use the coordinate system of b2 to align an element to b1.

The claims, as such, do not require that the master product and process concurrent model have absolutely no associative relationships with any coordinate system, the claims as such, only require that the master product and process concurrent model does not have a associative relationship (i.e., a single type of associative relationship or independance) with a coordinate system. See the instant specification that teaches the described independance has the advantage that for example, different reference sets or geometries may be selected and a new master process model generated therefrom and subsequently, the same features and associated datums added. Thus, the examiner respectfully submits that if a master product and process concurrent model can have a coordinate system added to it and at the same time the master product and

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process concurrent model does not have an associative relationship with a coordinate system, then the master product and process concurrent model can have at least one or more associative relationships with a coordinate system and the master product and process concurrent model has the ability to not have at least one or more other associative relationships with a coordinate system.

Referring to independent claims 1, 50, 99, and 122, while the claims recites the limitation of a master product and process concurrent model, the claims do not require any extracts of the master product and process concurrent model, and there is no explicit definition of the term "master product and process concurrent model". The examiner respectfully submits that, without claimed functionality of the master product and process concurrent model controlling extracts created from the master product and process concurrent model, the term "master" in the phrase "master product and process concurrent model" can only require that the model is not a master of anything and, thus, is just a product and process concurrent model.

As clearly stated in the previous rejection, the term "associative relationship" requires no further explanation and that it will be given its plain meaning as required by MPEP 2111.01. Webster's Dictionary defines associative as "of, or relating to, in association with" while relationship as "a state or character of being related... a natural or logical association between two or more things, connection."

17. Applicant argues that Gadh fails to teach each of said at least one manufacturing feature exhibiting an associative relationship with said coordinate system. The examiner respectfully disagrees.

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Gadh clearly teaches the user issues commands to align a child element from the user viewpoint (see argument directly above), such as align child with left-right/top-bottom/front-rear portion of the model (See col. 24, lines 6-32). The child element has already been shown to be a manufacturing feature.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SPS

Sean P. Shechtman

July 20, 2005


ALBERT W. PALADINI
PRIMARY EXAMINER